

1 WHAT IS CLAIMED IS:

- 2 1. A method of producing a high oxidative stability polyalphaolefin  
3 comprising the step of hydrogenating polyalphaolefin to a level of  
4 hydrogenation in which a Bromine Index of less than 200 mg Bromine  
5 per 100 gram sample of polyalphaolefin is achieved.
- 6 2. A method according to Claim 1 wherein a Bromine Index of less than  
7 100 mg Bromine per 100 gram sample of polyalphaolefin is achieved.
- 8 3. A method according to Claim 1 wherein a Bromine Index of less than  
9 50 mg Bromine per 100 gram sample of polyalphaolefin is achieved.
- 10 4. A method according to Claim 1 wherein a Bromine Index of less than  
11 25 mg Bromine per 100 gram sample of polyalphaolefin is achieved.
- 12 5. A method according to Claim 1 further comprising distilling the  
13 polyalphaolefin to remove impurities before the hydrogenating step.
- 14 6. A method according to Claim 5 wherein a Bromine Index of less than  
15 100 mg Bromine per 100 gram sample of polyalphaolefin is achieved.
- 16 7. A method according to Claim 5 wherein a Bromine Index of less than  
17 50 mg Bromine per 100 gram sample of polyalphaolefin is achieved.
- 18 8. A method according to Claim 5 wherein a Bromine Index of less than  
19 25 mg Bromine per 100 gram sample of polyalphaolefin is achieved.
- 20 9. A method according to Claim 5 further comprising a preliminary  
21 hydrogenating of the polyalphaolefin before the distilling step.

- 1 10. A method according to Claim 9 wherein a Bromine Index of less than  
2 100 mg Bromine per 100 gram sample of polyalphaolefin is achieved.
- 3 11. A method according to Claim 9 wherein a Bromine Index of less than  
4 50 mg Bromine per 100 gram sample of polyalphaolefin is achieved.
- 5 12. A method according to Claim 9 wherein a Bromine Index of less than  
6 25 mg Bromine per 100 gram sample of polyalphaolefin is achieved.
- 7 13. A lubricant composition comprising a polyalphaolefin having a Bromine  
8 Index of less than 200 mg Bromine per 100 gram sample of  
9 polyalphaolefin.
- 10 14. A composition according to Claim 13 wherein the composition has a  
11 Bromine Index of less than 100 mg Bromine per 100 gram sample of  
12 polyalphaolefin.
- 13 15. A composition according to Claim 13 wherein the composition has a  
14 Bromine Index of less than 50 mg Bromine per 100 gram sample of  
15 polyalphaolefin.
- 16 16. A composition according to Claim 13 wherein the composition has a  
17 Bromine Index of less than 25 mg Bromine per 100 gram sample of  
18 polyalphaolefin.
- 19 17. The composition of Claim 13 wherein the composition is an engine oil  
20 lubricant.
- 21 18. The composition of Claim 13 wherein the composition is a gear  
22 lubricant.

1 19. The composition of Claim 13 wherein the composition is an hydraulic  
2 lubricant.

3 20. The composition of Claim 13 wherein the composition is a compressor  
4 lubricant.

5 21. The composition of Claim 13 wherein the composition is an aerospace  
6 jet lubricant.

7 22. The composition of Claim 13 wherein the composition is a fiber optic  
8 cable gel.

9 23. The composition of Claim 13 wherein the composition is a synthetic  
10 grease.

11 24. The composition of Claim 13 wherein the composition is a dielectric  
12 fluid.

13 25. A method of producing a highly oxidatively stable polyalphaolefin  
14 comprising the step of hydrogenating polyalphaolefin to a level of  
15 hydrogenation in which an RBOT level of at least 2200 minutes is  
16 achieved when diphenyl amine is used as an antioxidant.

17 26. A method of producing a highly oxidatively stable polyalphaolefin  
18 comprising the step of hydrogenating a polyalphaolefin to a level of  
19 hydrogenation in which a Lube Oil Oxidator level of at least 45 hours is  
20 achieved when pressures between 350 and 2500 psi are applied.

21 27. The method of claim 1, wherein the PAO is distilled prior to  
22 hydrogenation.

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